**Complete if Known**

<b>Application Number</b>	09/844626
<b>Filing Date</b>	4/27/2001
<b>First Named Inventor</b>	BEATY et
<b>Art Unit</b>	2877
<b>Examiner Name</b>	
<b>Attorney Docket Number</b>	60012US

Sheet	1	of	1
-------	---	----	---

[illegible][illegible]Date  
Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>Substitute for form 1449A/PTO</b>				<b>Complete if Known</b>	
				Application Number	09/844626
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (use as many sheets as necessary)				Filing Date	4/27/2001
				First Named Inventor	BEATY et al.
				Art Unit	2877
				Examiner Name	
Sheet	1	of	5	Attorney Docket Number	60012US

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
		US-5,039,868	08/13/1991	Kobayashi	FIG. 4, Col. 7, L. 12 etc.
		US-5,455,870	10/03/1995	Sepai	FIG. 1, Col. 6, L. 12 etc.
		US-5,574,801	11/12/1996	Collet-Beillon	FIGS. 4, 8, 9 Col. 7, L. 35
		US-6,005,965	12/21/1999	Tsuda et al.	FIGS. 1-8, Col. 1
		US-5,828,449	10/27/1998	King	FIG. 1
		US-1,894,025	01/10/1933	Dennison et al.	
		US-3,895,446	07/22/1975	Orlov et al.	
		US-4,084,875	04/18/1978	Yamamoto	
		US-4,213,146	07/15/1980	Maiman	
		US-4,463,310	07/31/1984	Whitley	
		US-4,521,807	06/04/1985	Werson	
		US-4,603,487	08/05/1986	Matsunata	
		US-4,638,471	01/20/1987	van Rosmalen	
		US-4,677,473	06/30/1987	Okamoto	
		US-4,714,830	12/22/1987	Usui	
		US-4,731,855	03/15/1988	Suda et al.	
		US-4,774,768	10/04/1988	Chiponis	
		US-4,776,102	10/11/1988	Carroll	
		US-4,776,103	10/11/1988	Cote	
		US-4,821,157	04/11/1989	Birk et al.	
		US-4,825,394	04/25/1989	Beamish et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No.	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				
		WO9112489	08/22/1991	ABOS AUTOMATION		
		WO9207250	04/30/1992	ABOS AUTOMATION		
		WO97/44634	11/27/1997	KOMATSU LTD.		X
		JP9304030(ABSTRACT)	11/28/1997	KOMATSU LTD.		X

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.  
Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.  
Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>Substitute for form 1449A/PTO</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	09/844626
				Filing Date	4/27/2001
				First Named Inventor	BEATY et al.
				Art Unit	2877
Examiner Name					
Attorney Docket Number	60012US				
Sheet	2	of	5		

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
		US-4,849,743	07/18/1989	Ohno	
		US-4,886,958	12/12/1989	Merryman et al.	
		US-4,943,722	07/24/1990	Breton et al.	
		US-4,973,948	11/27/1990	Roberts	
		US-5,032,924	07/16/1991	Brown et al.	
		US-5,048,904	09/17/1991	Montagu	
		US-5,058,178	10/15/1991	Ray	
		US-5,095,447	03/10/1992	Manns et al.	
		US-5,113,581	05/19/1992	Hidese	
		US-5,114,229	05/19/1992	Hideshima	
		US-5,133,601	07/28/1992	Cohen et al.	
		US-5,140,643	08/18/1992	Izumi et al.	
		US-5,163,232	11/17/1992	Gonzales, Jr. et al.	
		US-5,173,796	12/22/1992	Palm et al.	
		US-5,204,734	04/20/1993	Cohen et al.	
		US-5,208,463	05/04/1993	Honma et al.	
		US-5,245,671	09/14/1993	Kobayashi et al.	
		US-5,276,546	01/04/1994	Palm et al.	
		US-5,307,149	04/26/1994	Palm et al.	
		US- 5,355,221	10/11/1994	Cohen et al.	

RECEIVED

JUN 17 2003

Technology Center 2600

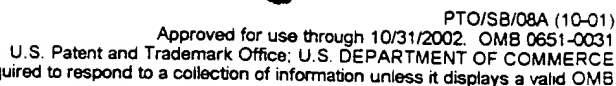
FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				
		JP10104033(ABSTRACT)	04/24/1998	KOMATSU LTD.		X
		JP10221066(ABSTRACT)	08/21/1998	KOMATSU LTD.		X
		JP10227623(ABSTRACT)	08/25/1998	KOMATSU LTD.		X
		JP10232114	09/02/1998	KOMATSU LTD.		
		JP10267621(ABSTRACT)	10/09/1998	KOMATSU LTD.		X

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Un  
control number.

Substitute for form 1449A/PTO

(use as many sheets as necessary)

Sheet

3

of

5

**Complete if Known**

Application Number

09/844626

**Filing Date**

4/27/2001

**First Named Inventor**

BEATY et al.

Art Unit

2877

Examiner Name

Attorney Docket Number

60012US

## U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
		US-5,420,689	05/30/1995	Siu	
		US-5,420,691	05/30/1995	Kawaguchi	
		US-5,430,548	07/04/1995	Hiroi et al.	
		US-5,452,080	09/19/1995	Tomiya	
		US-5,465,152	11/07/1995	Bilodeau et al.	
		US-5,546,189	08/13/1996	Svetkoff et al.	
		US-5,550,763	08/27/1996	Michael et al.	
		US-5,563,702	10/08/1996	Emery et al.	
		US-5,563,703	10/08/1996	Lebeau et al.	
		US-5,574,668	11/12/1996	Beaty	
		US-5,581,632	12/03/1996	Koljonen	
		US-5,592,562	01/07/1997	Rooks	
		US-5,600,150	02/04/1997	Stern et al.	
		US-5,617,209	04/01/1997	Svetkoff et al.	
		US-5,621,530	04/15/1997	Marrable, Jr.	
		US-5,648,853	07/15/1997	Stern et al.	
		US-5,652,658	07/29/1997	Jackson et al.	
		US-5,654,800	08/05/1997	Svetkoff et al.	
		US-5,692,070	11/25/1997	Kobayashi	
		US-5,734,475	03/31/1998	Pai	

## FOREIGN PATENT DOCUMENTS

[illegible]

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.**

PTO/SB/08A (10-01)  
Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO				<b>Complete if Known</b> <b>Application Number</b> 09/844626 <b>Filing Date</b> 4/27/2001 <b>First Named Inventor</b> BEATY et al. <b>Art Unit</b> 2877 <b>Examiner Name</b> <b>Attorney Docket Number</b> 60012US	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>					
Sheet	4	of	5		

[illegible][illegible]

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



PTO/SB/08B (10-01)  
Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB

control number.

<b>Substitute for form 1449B/PTO</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>		<b>Complete if Known</b>			
		<b>Application Number</b>	09/844626		
		<b>Filing Date</b>	4/27/2001		
		<b>First Named Inventor</b>	BEATY et al.		
		<b>Group Art Unit</b>	2877		
		<b>Examiner Name</b>			
<b>Sheet</b>	5	<b>of</b>	5	<b>Attorney Docket Number</b>	60012US

RECEIVED  
JUN 17 2003

Technology Center 2600

<b>OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS</b>			
<b>Examine r Initials*</b>	<b>Cite No.</b>	<b>Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.</b>	<b>T<sup>2</sup></b>
		BALLARD, BROWN, "Range Information From Geometry," <i>Computer Vision</i> , p.88-89, unknown date.	
		ICOS VISION SYSTEMS, NV, Brochure, undated, "BGA 2D Inspection System."	
		GONZALEZ, WINTZ, "Stereo Imaging," <i>Digital Image Processing</i> , pp. 52-54, circa 1987.	
		GONZALEZ, WOODS, "Stereo Imaging," <i>Digital Image Processing</i> , pp. 68-72, circa 1992.	
		SCHURR, "Basics of Stereoscopic Machine Vision for 3D Gauging," <i>International Robots &amp; Vision Automation Conference</i> , April 4-8, 1993, PP. 16/37-46.	
		HANDLICK(SP?), SHAPIRO, "Stereo," <i>Computer Robot</i> , pp. 156-159, circa 1993.	
		SMETS ET AL., "System for 2D and 3D Inspection of BGA'S Using Vision," <i>BGA Packaging and Assembly conference</i> , pp. 1-8, January 16-17, 1995.	
		CARACAPPA, "On improving BGA Reliability," <i>SMT</i> , pp.44-46, June, 1997.	
		KOMATSU, "CSP Inspection Machine," undated brochure available at Japan Semicon Conference in December 1997.	
		ICOS VISION SYSTEMS, NV, Brochure, undated, "BGA 3D Inspection System," available at least as early as 1997.	
		ICOS VISION SYSTEMS, NV, Brochure, undated, "CI-8250 The Complete High-Speed Inspection System."	

<b>Examiner Signature</b>		<b>Date Considered</b>	
-------------------------------	--	----------------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231